UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,450	03/25/2004	Kuei-Ann Wen	N0132/PP/HH	1775

41744   7590   05/02/2007

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ART UNIT	PAPER NUMBER
2193	

MAIL DATE	DELIVERY MODE
05/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>03/25/2004</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-11</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-11</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>25 March 2004</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

1.   Claims 1-11 are pending in the application.

Objections

2.   Claim 7, line 9 is objected to because of the following informalities: It appears

that the word "said" preceding the word threshold has been misspelled. Appropriate

correction is required.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Sullivan (US Pat. 7,020,190) in view of Van Wechel et al. (hereafter Van

Wechel)(US Pat. 7,185,038).

5.   **As to claim 1,** Sullivan discloses a phase selector to determine a rotation

direction according to values recorded in said buffer memory (column 4, lines 48-54);

A rotation calculator to rotate an input coordinate for a predetermined angle and

to calculate resulting coordinate value after such rotation (phase rotator 202 of figure 2

and column 4, lines 37-60); and

An angle accumulator to accumulate total rotation angle being made to said input

coordinate according to value recorded by said rotation counter (phase accumulator 102

of figure 2 and column 4, line 61-column 5, line 14).

6.   Sullivan does not disclose a buffer memory to record a plurality of group

coordinate values and a rotation counter to count the number of rotation being made to

said input coordinate.

However, Van Wechel discloses a buffer memory to record a plurality of group

coordinate values (column 23, lines 3-8) and a rotation counter to count the number of

rotation being made to said input coordinate (column 15, lines 35-52 and column 16,

lines 14-26).

7.   Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to modify the teachings of Sullivan, by implementing a buffer

memory and counter, as taught by Van Wechel, in order to efficiently perform

rotations/shifting utilizing a CORDIC circuit. One would seek to use a buffer memory for

storage as it provides quick and easy access.

8.   **As to claim 2,** Sullivan further discloses a bit selector to shift bits of said input

coordinate (column 5, lines 12-14).

9.   **As to claim 3,** Sullivan further discloses said rotation calculator rotates a

coordinate at the angle of +- $\Pi/(4x2^{\wedge}\Pi)$, wherein n represents number of rotation and

direction thereof is determined by said phase selector (Column 1, line 63-column 2, line

8 and column 3, lines 18-28 disclose rotation of an input at an angle by a rotator,

however, the specific angle such as +- $\Pi/(4x2^{\wedge}\Pi)$ is not limiting, as the choice of angle

used can be selected from a plurality.)

10.   **As to claim 4,** Sullivan further discloses said phase selector determines direction

of rotation according to the positive or negative value of said input coordinate (column 4,

lines 37-60).

11.   **As to claim 6,** the combination of Sullivan and Van Wechel disclose:

a. Obtaining an input coordinate (Sullivan column 3, lines 18-27);

b. Determining a rotation direction according to said input coordinate (Sullivan column 4,

lines 48-54);

c. Rotating said input coordinate for a predetermined angle to said determined rotation

direction to obtain a new coordinate (Sullivan column 4, lines 37-60);

d. Recording said rotation (Van Wechel, column 23, lines 3-8);

e. Comparing number of rotation being recorder with a threshold value; if said number

of rotation is smaller than said threshold value, steps b to e are repeated (Van Wechel

column 17, line 64-column 18, line 15 discloses a correlating event compared to a

predetermined threshold in a signal processing environment, thus may be analogous to

comparing rotation amounts with a threshold value.); otherwise

f. Accumulate total rotation angle (column 4, line 61-column 5, line 14); and

g. Output said total rotation angle and said new coordinate (column 3, lines 18-28).

12.   **As to claim 7,** the claim is rejected for the same reasons as claim 6 above.

13.   **As to claim 8,** the claim is rejected for the same reasons as claim 2 above.

14.   **As to claim 9,** the claim is rejected for the same reasons as claim 3 above.

15.   **As to claim 10,** the claim is rejected for the same reasons as claim 4 above.

16.   Claims 5 an 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sullivan in view of Van Wechel as applied to claims 1 and 7 above, and further in view

of Wu et al. (hereafter Wu)(US Pat. 7,047,269).

17.   **As to claims 5 and 11,** Sullivan and Van Wechel do not disclose said rotation

calculator calculates the resulted coordinate value of a rotation according to the

following equations:

   x.sub.i+1=x.sub.i-.mu..sub.iy.sub.i2- .sup.-1

   y.sub.i+1=y.sub.i+.mu..sub.ix.sub.i2.sup.-1

Wherein x.sub.0, y.sub.0 represent input coordinate, x.sub.i+1, y.sub.i+1 represent

coordinate after the i+1th rotation, .mu..sub.i=sign(x.sub.i*y.sub.i), i represents number

of rotation.

However, Wu discloses said rotation calculator calculates the resulted coordinate

value of a rotation according to the following equations:

   x.sub.i+1=x.sub.i-.mu..sub.iy.sub.i2- .sup.-1

   y.sub.i+1=y.sub.i+.mu..sub.ix.sub.i2.sup.-1

Wherein x.sub.0, y.sub.0 represent input coordinate, x.sub.i+1, y.sub.i+1 represent

coordinate after the i+1th rotation, .mu..sub.i=sign(x.sub.i*y.sub.i), i represents number

of rotation (column 1, lines 55-67).

18.   Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to modify the teachings of Sullivan and Van Wechel, by using the

equations taught in Wu, for the benefit of successfully executing vector rotation as the

equation representation of the CORDIC algorithm is well know, as specified in Wu
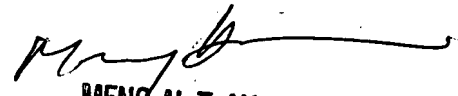
(column 1, lines 36-41).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Yaary whose telephone number is (571) 270-1249. The examiner can normally be reached on Monday-Friday, 8:00 a.m - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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